

Notice of Allowability

Application No.

10/529,248

Examiner

Rip A. Lee

Applicant(s)

RAZAVI, ABBAS

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 21-46.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 09-22-05;11-03-05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with William D. Jackson on March 14, 2007.

Page 2

Claim 21, line 7 replace "the bridge-head" with "a bridge-head"

Page 3

Claim 21, line 2 delete " , which can be"

Claim 21, line 3 delete "substituted or unsubstituted"

Claim 23, line 2 delete "-type" which occurs after "cyclopentadienyl"

Claim 23, line 4 delete "-type" which occurs after "fluorenyl"

Claim 23, line 6 delete "-type" which occurs after "indenyl"

Claim 24, line 2 delete "-type" which occurs after "cyclopentadienyl"

Claim 24, line 4 delete "-type" which occurs after "fluorenyl"

Claim 24, line 6 delete "-type" which occurs after "indenyl"

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Claim 29, line 2 delete "-type" which occurs after "cyclopentadienyl"

Claim 24, line 4 delete "-type" which occurs after "fluorenyl"

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Claim 31, line 2	replace “carbon atom” with “position”
Claim 31, line 2	delete “-type” which occurs after “cyclopentadienyl”
Claim 33, line 2	delete “-type” which occurs after “cyclopentadienyl”
Claim 34, line 2	delete “-type” which occurs after “cyclopentadienyl”

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Claim 35, line 3	replace “carbon atom” with “position”
Claim 37, line 2	delete “-type” which occurs after “cyclopentadienyl”

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Claim 44, line 9	replace “the bridge-head” with “a bridge-head”
Claim 44, line 22	delete “substitute delete “ , which can be”
Claim 44, line 23	delete “substituted or unsubstituted”

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: Claims 21-46 are allowed over the closest references cited below.

The present invention is drawn to a metallocene catalyst component for producing polyolefins according to formula (I) $R''(CpR_n)_g(CpR_n)MQ_{3-g}$ or according to formula (II) $R''(CpR_n)_gMXQ_{3-g}$ wherein Cp is a (un)substituted cyclopentadienyl ring with a bridgehead position of at least one of the cyclopentadienyl rings being occupied by a silicon atom, R'' is a structural bridge between two Cp rings or between a Cp ring and a heteroatom ligand X, M is a group 3-6 transition metal (see claims for full structural details).

It is understood that the proviso statement, "a bridgehead position of at least one of the cyclopentadienyl rings being occupied by a silicon atom" implies that the metallocene catalyst component contains at least one (un)substituted silolyl ligand where the Si atom thereof is connected directly to structural bridge R''.

Another aspect of the invention is drawn to a process for the polymerization of an olefin comprising providing a metallocene catalyst system comprising said metallocene catalyst component (see claims for full process details).

Dysard *et al.* (*J. Am. Chem. Soc.*, 2000) discloses the unbridged metallocene, $Cp^*[\eta^5-C_4Me_4Si-SiMe_3]ZrCl_2$ (7), which contains one silolyl ligand in which the ring silicon is substituted with a trimethylsilyl group. Clearly, this compound does not possess the structural requisites of the instant claims.

Wada *et al.* (JP 8-245715) teaches a catalyst for olefin polymerization comprising an unbridged metallocene component containing at least one (un)substituted silolyl ligand, such as *bis*(silolyl)ZrCl₂. The inventors contemplate metallocenes containing polycyclic variants of the silolyl ligand, but there is no teaching or suggestion to make use of metallocenes containing at least one Cp in which the bridgehead position is occupied by a silicon atom, as recited in the instant claims. One skilled in the art would not have found it obvious to modify the teachings of Wada *et al.* and thereby arrive at the subject matter of the instant claims.

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Resconi *et al.* (U.S. 6,608,224) discloses the bridged complex, $\text{Me}_2\text{Si}[6-(3\text{-methylcyclopentadienyl-[1,2-}b\text{]-silole})\text{ZrMe}_2$ and substituted variants thereof. In this case, the heterocyclic rings do not contain a bridgehead silicon, as required by the instant claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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March 14, 2007



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